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In re Application of:

CAROLYN C. FAOUR et al.

Serial No. To be Assigned

Filed: HEREWITH

For: SYSTEM AND METHOD FOR HANDLING A UNIT OF WORK

TRANSMITTAL

BOX: Patent Application

Hon. Commissioner of Patents
and Trademarks
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1. Transmittal with Certificate of Mailing
2. Patent Application
3. Informal drawings
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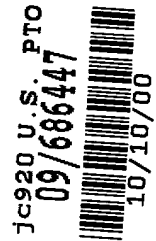
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Respectfully submitted,

A handwritten signature in cursive script, appearing to read "KCH", written over a horizontal line.

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SPECIFICATION

Docket No. 0544MH-40015

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN that we, Carolyn Faour, Paul Anderson, and Avi Bedi, residing in the State of Texas, have invented new and useful improvements in a

SYSTEM AND METHOD FOR HANDLING A UNIT OF WORK

of which the following is a specification:

CROSS REFERENCE TO RELATED APPLICATION

1 The present application claims the benefit of priority of US Provisional
2 application No. 60/158,729, filed October 11, 1999, titled COMMON
3 FRAMEWORK FOR SYSTEMS THAT MANAGE A UNIT OF WORK THROUGH
4 ITS LIFE CYCLE.

BACKGROUND OF THE INVENTION

5 1. Field of the Invention:

6 The present invention relates generally to computer systems, and more
7 specifically to a system and method for handling a work item within the system
8 during that item's lifetime.

9 2. Description of the Prior Art:

10 Numerous techniques are used to manage work that is to be performed.
11 How that work is handled depends in part upon the nature of the work. In some
12 applications, a single work item is worked upon by several different entities,
13 human or automated systems, at different times. Work of this type is difficult for
14 existing system to deal with, because keeping up with the work item and its
15 status is not provided for.

16 An example of such a system would be one associated with a "help desk",
17 in which requests for assistance are submitted by users, and addressed at
18 various times by technicians. When a user submits a request for assistance, that

Variable	Mean	SD	Min	Max
Age	34.5	10.2	21	55
Gender				
Male	15.2	3.5	0	25
Female	19.8	4.1	0	30
Marital status				
Married	12.5	2.8	0	20
Single	22.0	5.5	0	35
Education				
High school	8.5	2.5	0	15
College	15.5	3.5	0	25
Postgraduate	5.0	1.5	0	10
Income				
Low	10.0	3.0	0	20
Medium	15.0	4.0	0	25
High	5.0	1.5	0	10
Occupation				
Manager	12.0	3.0	0	20
Professional	18.0	4.0	0	25
Service	10.0	3.0	0	20
Unemployed	5.0	1.5	0	10
Health status				
Good	15.0	3.0	0	25
Fair	10.0	2.0	0	20
Poor	5.0	1.5	0	10
Smoking status				
Smoker	8.0	2.0	0	15
Nonsmoker	17.0	4.0	0	25
Alcohol consumption				
Frequent	5.0	1.5	0	10
Occasional	10.0	3.0	0	20
Never	15.0	3.0	0	25
Exercise frequency				
Daily	12.0	3.0	0	20
Weekly	10.0	3.0	0	20
Monthly	5.0	1.5	0	10
Never	5.0	1.5	0	10

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BRIEF DESCRIPTION OF THE DRAWINGS

1 The novel features believed characteristic of the invention are set forth in the
2 appended claims. The invention itself however, as well as a preferred mode of use,
3 further objects and advantages thereof, will best be understood by reference to the
4 following detailed description of an illustrative embodiment when read in
5 conjunction with the accompanying drawings, wherein:

6 Figure 1 is a block diagram illustrating a preferred common workflow
7 domain;

8 Figure 2 is a table identifying the contents of a preferred work item;

9 Figure 3 is a diagram depicting a preferred composite action;

10 Figure 4 is a flowchart outlining a process for handling work items; and

11 Figure 5 is a block diagram illustrating data flows in a preferred embodiment
12 of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

1 As will be appreciated by those skilled in the art, the detailed implementation
2 of the preferred embodiment can be made in numerous ways. Preferably, an
3 object oriented environment is used, as it easily represents the various objects and
4 methods described below. However, the described system and method can be
5 used with systems of various types.

6 The following discussion can be better understood with reference to an
7 example. The invention is not limited to a system implementing the described
8 example, but it is used for explanatory purposes only.

9 In a business that assists users with questions regarding products they have
10 purchased, some technique is needed to track the status of numerous inquiries.
11 One approach is to provide a "trouble ticket," a document that is passed around
12 containing the history of resolving the help request, and other information relevant
13 to the request. This can be conceptualized as a physical document, a piece of
14 paper, but is implemented as objects in a computer system domain.

15 The trouble ticket, referred to herein generically as a "work item," is
16 preferably an object in an object oriented computer system. A new work item is
17 created when a help request is first made, and exists until the request is completely
18 resolved. The work item can change state, be passed to various personnel at
19 various locations for handling, and can be modified at various stages. IN addition,

accessed. Contained within the domain are a number of composite actions 16, described below, and work items 16. Numerous other support and other modules and objects are included in domain 10 as known in the art, but the composite actions 14 and work items 16 are of primary conceptual interest. All access to the work items 16 is through the defined interface 12.

Figure 2 describes the parts of a work item 16. Each work item 16 has a Category, which is used to determine, in part, how the work item 16 is handled. Each work item has a State, which indicates where the work item 16 is in the business process flow. Typical states could include new, pending, awaiting follow up, completed, and so forth. A State indicates whether the work item 16 is open or closed. An open item has been locked by a handler process, and work is being done on it. A closed item is waiting in a queue for work to be performed.

Each work item 16 has a Location. All work items must be located in a queue, and the location identifies the queue the work item 16 is in. The Creator and Responsible fields indicate who created the work item 16, and who is responsible for dealing with it. The Responsible field can change during the course of handling the work item. The Due field, which may not be used in some cases, indicates when the problem represented by the work item must be resolved. This information can be used to, among other things, prioritize work items in a queue.

The History filed contains a history of all actions that have been undertaken on this work item 16. Each time the item is amended in any way, or moved to a different queue, the history field is updated. By reviewing the History entry at any

1 time, the complete sequence of events relating to this work item 16 can be
2 recreated. The Description field includes a definition of the problem represented by
3 the work item, and can include text and coded indicators.

4 Figure 3 shows a composite action 14. Each composite action 14 contains a
5 rule, which is a Boolean expression that gives an answer of True or False. The rule
6 can be omitted. By linking a series of composite actions together in sequence,
7 nearly any business process can be defined by using composite actions 14.

8 Three sets of actions are provided. A first set 18 is executed by default
9 when the composite action has no rule, or when the rule is not evaluated because
10 of a setting. A second set of actions 20 is executed when the Rule evaluates to
11 True, and a third set of actions 22 is evaluated when the rule evaluates to False.
12 These actions are any which can be executed by the system. Typical actions
13 include sending the work item to a particular queue, sending e-mail or fax
14 messages to the customer or a technician, and similar types of notifications. The
15 actions can be more complex, and initiate various actions to be performed by the
16 system. For example, an action could include access to a database of expert
17 knowledge about a certain problem, followed by display of suggested solutions to a
18 technician.

19 In the preferred embodiment, each Rule has three possible outcomes. If
20 desired, other outcomes can be accommodated, with multi-way logical branching
21 occurring. Each outcome of the rule evaluation can have a separate set of actions
22 to be executed, in the manner described above.

1 ticket ion connection with a help desk has been described as an example, but
 2 numerous other situations are suitable for the system and method of the invention.
 3 For example, nearly any customer relationship that requires several different people
 4 to wok on could use the described processes. Whenever any piece of work must
 5 be handled by different entities at different times, the described system and method
 6 can usually be defined to handle the process.

7 While the invention has been particularly shown and described with
 8 reference to a preferred embodiment, it will be understood by those skilled in the art
 9 that various changes in form and detail may be made therein without departing from
 10 the spirit and scope of the invention.

What is claimed is:

1 1. A method for handling jobs within a computer system, comprising the
2 steps of:

3 providing a plurality of work items, each work item representing a job to be
4 performed, each work item including a category, state, and change history;

5 placing each work item into one of a plurality of queues;

6 in turn, opening each work item in a queue, and executing one or more
7 tasks on the item; and

8 after executing the tasks, if the job represented by a work item is complete
9 archiving the work item, and if the job is not yet complete, placing the work item
10 into a queue.

1 2. The method of Claim 1, wherein the step of executing a task includes the
2 step of modifying the work item.

1 3. The method of Claim 1, wherein the step of executing a task includes the
2 step of sending an e-mail to a person.

1 4. The method of Claim 1, wherein the step of executing a task includes the
2 step of sending a fax to a person.

1 11. A system for handling jobs within a computer system, comprising:
2 a plurality of queues;
3 a plurality of work items, each representing a job to be performed, each
4 work item having a category, a state, and a history;
5 a plurality of composite actions, each defining one or more tasks to be
6 executed with respect to a work item.

1 12. The system of Claim 11, wherein each composite action includes a rule to
2 be evaluated, and at least two sets of tasks to be performed depending on the
3 outcome of the evaluation.

1 13. The system of Claim 12, wherein the rule evaluates to a value of true or
2 false.

1 14. The system of Claim 13, further including a set of rules to be evaluated if
2 there is no rule to be evaluated.

1 15. The system of Claim 11, wherein the work items each further include an
2 identification of a party that created the work item.

Table 1. Demographic characteristics of the study population	
Characteristic	Frequency (%)
Age (years)	
< 18	10 (10.0)
18-24	15 (15.0)
25-34	20 (20.0)
35-44	25 (25.0)
45-54	20 (20.0)
55-64	15 (15.0)
65-74	10 (10.0)
75-84	5 (5.0)
85-94	5 (5.0)
≥ 95	5 (5.0)
Gender	
Male	10 (10.0)
Female	90 (90.0)
Ethnicity	
White	10 (10.0)
Black	15 (15.0)
Hispanic	20 (20.0)
Asian	25 (25.0)
Other	10 (10.0)
Marital status	
Married	10 (10.0)
Single	15 (15.0)
Divorced	20 (20.0)
Widowed	25 (25.0)
Never married	10 (10.0)
Education level	
Less than high school	10 (10.0)
High school graduate	15 (15.0)
Some college	20 (20.0)
College graduate	25 (25.0)
Postgraduate	10 (10.0)
Income level	
< \$10,000	10 (10.0)
\$10,000-\$19,999	15 (15.0)
\$20,000-\$29,999	20 (20.0)
\$30,000-\$39,999	25 (25.0)
\$40,000-\$49,999	10 (10.0)
\$50,000-\$59,999	5 (5.0)
\$60,000-\$69,999	5 (5.0)
\$70,000-\$79,999	5 (5.0)
\$80,000-\$89,999	5 (5.0)
\$90,000-\$99,999	5 (5.0)
≥ \$100,000	5 (5.0)
Health insurance	
Medicare	10 (10.0)
Medicaid	15 (15.0)
Private	20 (20.0)
Other	25 (25.0)
Uninsured	10 (10.0)
Employment status	
Employed	10 (10.0)
Unemployed	15 (15.0)
Retired	20 (20.0)
Disabled	25 (25.0)
Homemaker	10 (10.0)
Student	5 (5.0)
Other	5 (5.0)
Living arrangement	
Alone	10 (10.0)
With family	15 (15.0)
With friends	20 (20.0)
In care facility	25 (25.0)
Other	10 (10.0)
Transportation	
Own car	10 (10.0)
Public transit	15 (15.0)
Taxi	20 (20.0)
Other	25 (25.0)
Unreliable	10 (10.0)
Health status	
Excellent	10 (10.0)
Very good	15 (15.0)
Good	20 (20.0)
Fair	25 (25.0)
Poor	10 (10.0)
Very poor	5 (5.0)
Chronic conditions	
None	10 (10.0)
1	15 (15.0)
2	20 (20.0)
3	25 (25.0)
4	10 (10.0)
5	5 (5.0)
6	5 (5.0)
7	5 (5.0)
8	5 (5.0)
9	5 (5.0)
10	5 (5.0)
11	5 (5.0)
12	5 (5.0)
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14	5 (5.0)
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31	5 (5.0)
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36	5 (5.0)
37	5 (5.0)
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41	5 (5.0)
42	5 (5.0)
43	5 (5.0)
44	5 (5.0)
45	5 (5.0)
46	5 (5.0)
47	5 (5.0)
48	5 (5.0)
49	5 (5.0)
50	5 (5.0)
51	5 (5.0)
52	5 (5.0)
53	5 (5.0)
54	5 (5.0)
55	5 (5.0)
56	5 (5.0)
57	5 (5.0)
58	5 (5.0)
59	5 (5.0)
60	5 (5.0)
61	5 (5.0)
62	5 (5.0)
63	5 (5.0)
64	5 (5.0)
65	5 (5.0)
66	5 (5.0)
67	5 (5.0)
68	5 (5.0)
69	5 (5.0)
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22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



Figure 1: Schematic representation of the experimental design. The diagram shows a flow from 'Study 1' to 'Study 2'. Study 1 involves 'Pretest' and 'Main Study'. Study 2 involves 'Pretest' and 'Main Study'. The 'Main Study' in Study 2 is divided into 'Control' and 'Intervention' groups. The 'Intervention' group is further divided into 'Intervention 1' and 'Intervention 2'. The 'Control' group is further divided into 'Control 1' and 'Control 2'. The 'Intervention 1' and 'Intervention 2' groups are further divided into 'Intervention 1a' and 'Intervention 1b' and 'Intervention 2a' and 'Intervention 2b'. The 'Control 1' and 'Control 2' groups are further divided into 'Control 1a' and 'Control 1b' and 'Control 2a' and 'Control 2b'. The 'Intervention 1a' and 'Intervention 1b' groups are further divided into 'Intervention 1a1' and 'Intervention 1a2' and 'Intervention 1b1' and 'Intervention 1b2'. The 'Intervention 2a' and 'Intervention 2b' groups are further divided into 'Intervention 2a1' and 'Intervention 2a2' and 'Intervention 2b1' and 'Intervention 2b2'. The 'Control 1a' and 'Control 1b' groups are further divided into 'Control 1a1' and 'Control 1a2' and 'Control 1b1' and 'Control 1b2'. The 'Control 2a' and 'Control 2b' groups are further divided into 'Control 2a1' and 'Control 2a2' and 'Control 2b1' and 'Control 2b2'. The 'Intervention 1a1' and 'Intervention 1a2' groups are further divided into 'Intervention 1a1a' and 'Intervention 1a1b' and 'Intervention 1a2a' and 'Intervention 1a2b'. The 'Intervention 1b1' and 'Intervention 1b2' groups are further divided into 'Intervention 1b1a' and 'Intervention 1b1b' and 'Intervention 1b2a' and 'Intervention 1b2b'. The 'Intervention 2a1' and 'Intervention 2a2' groups are further divided into 'Intervention 2a1a' and 'Intervention 2a1b' and 'Intervention 2a2a' and 'Intervention 2a2b'. The 'Intervention 2b1' and 'Intervention 2b2' groups are further divided into 'Intervention 2b1a' and 'Intervention 2b1b' and 'Intervention 2b2a' and 'Intervention 2b2b'. The 'Control 1a1' and 'Control 1a2' groups are further divided into 'Control 1a1a' and 'Control 1a1b' and 'Control 1a2a' and 'Control 1a2b'. The 'Control 1b1' and 'Control 1b2' groups are further divided into 'Control 1b1a' and 'Control 1b1b' and 'Control 1b2a' and 'Control 1b2b'. The 'Control 2a1' and 'Control 2a2' groups are further divided into 'Control 2a1a' and 'Control 2a1b' and 'Control 2a2a' and 'Control 2a2b'. The 'Control 2b1' and 'Control 2b2' groups are further divided into 'Control 2b1a' and 'Control 2b1b' and 'Control 2b2a' and 'Control 2b2b'. The 'Intervention 1a1a' and 'Intervention 1a1b' groups are further divided into 'Intervention 1a1a1' and 'Intervention 1a1a2' and 'Intervention 1a1b1' and 'Intervention 1a1b2'. The 'Intervention 1a2a' and 'Intervention 1a2b' groups are further divided into 'Intervention 1a2a1' and 'Intervention 1a2a2' and 'Intervention 1a2b1' and 'Intervention 1a2b2'. The 'Intervention 1b1a' and 'Intervention 1b1b' groups are further divided into 'Intervention 1b1a1' and 'Intervention 1b1a2' and 'Intervention 1b1b1' and 'Intervention 1b1b2'. The 'Intervention 1b2a' and 'Intervention 1b2b' groups are further divided into 'Intervention 1b2a1' and 'Intervention 1b2a2' and 'Intervention 1b2b1' and 'Intervention 1b2b2'. The 'Intervention 2a1a' and 'Intervention 2a1b' groups are further divided into 'Intervention 2a1a1' and 'Intervention 2a1a2' and 'Intervention 2a1b1' and 'Intervention 2a1b2'. The 'Intervention 2a2a' and 'Intervention 2a2b' groups are further divided into 'Intervention 2a2a1' and 'Intervention 2a2a2' and 'Intervention 2a2b1' and 'Intervention 2a2b2'. The 'Intervention 2b1a' and 'Intervention 2b1b' groups are further divided into 'Intervention 2b1a1' and 'Intervention 2b1a2' and 'Intervention 2b1b1' and 'Intervention 2b1b2'. The 'Intervention 2b2a' and 'Intervention 2b2b' groups are further divided into 'Intervention 2b2a1' and 'Intervention 2b2a2' and 'Intervention 2b2b1' and 'Intervention 2b2b2'. The 'Control 1a1a' and 'Control 1a1b' groups are further divided into 'Control 1a1a1' and 'Control 1a1a2' and 'Control 1a1b1' and 'Control 1a1b2'. The 'Control 1a2a' and 'Control 1a2b' groups are further divided into 'Control 1a2a1' and 'Control 1a2a2' and 'Control 1a2b1' and 'Control 1a2b2'. The 'Control 1b1a' and 'Control 1b1b' groups are further divided into 'Control 1b1a1' and 'Control 1b1a2' and 'Control 1b1b1' and 'Control 1b1b2'. The 'Control 1b2a' and 'Control 1b2b' groups are further divided into 'Control 1b2a1' and 'Control 1b2a2' and 'Control 1b2b1' and 'Control 1b2b2'. The 'Control 2a1a' and 'Control 2a1b' groups are further divided into 'Control 2a1a1' and 'Control 2a1a2' and 'Control 2a1b1' and 'Control 2a1b2'. The 'Control 2a2a' and 'Control 2a2b' groups are further divided into 'Control 2a2a1' and 'Control 2a2a2' and 'Control 2a2b1' and 'Control 2a2b2'. The 'Control 2b1a' and 'Control 2b1b' groups are further divided into 'Control 2b1a1' and 'Control 2b1a2' and 'Control 2b1b1' and 'Control 2b1b2'. The 'Control 2b2a' and 'Control 2b2b' groups are further divided into 'Control 2b2a1' and 'Control 2b2a2' and 'Control 2b2b1' and 'Control 2b2b2'.

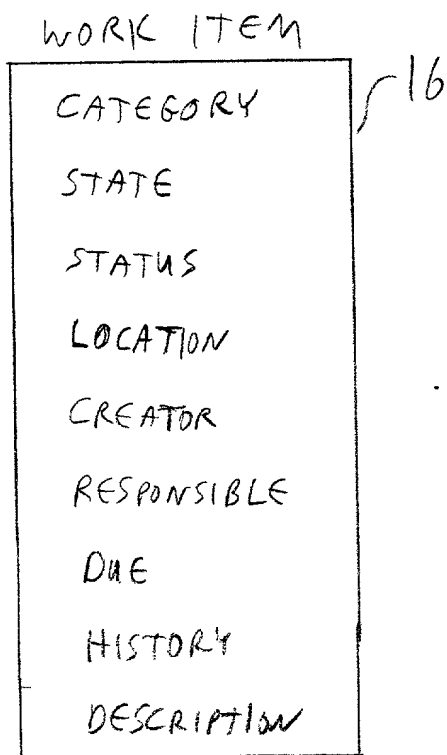


FIG 3

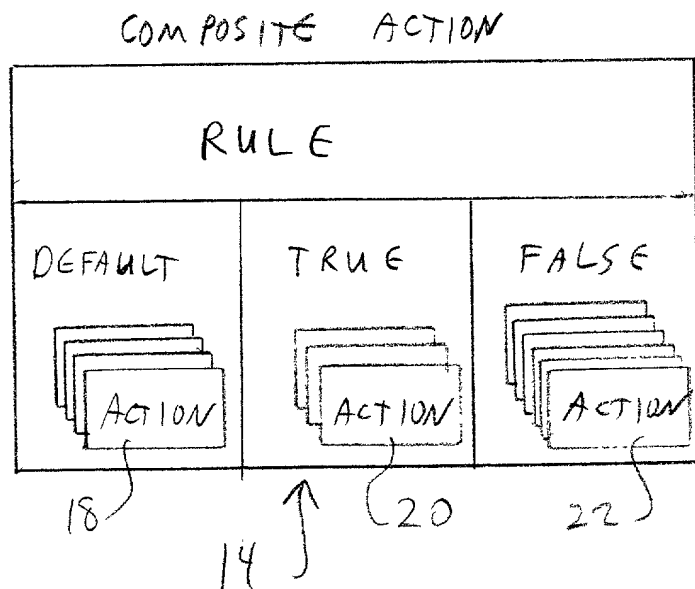
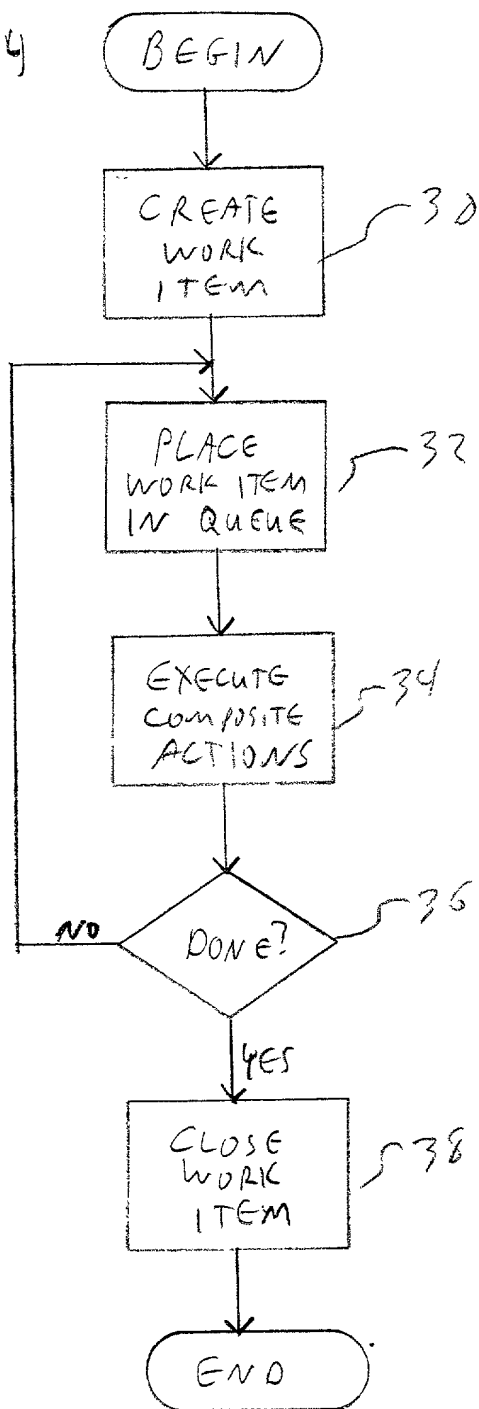


FIG 4



40.

507

527

547

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